

## SUPPLEMENT

# Is a statewide tobacco quitline an appropriate service for specific populations?

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**Objective:** To assess whether smoking quit rates and satisfaction with the Washington State tobacco quitline (QL) services varied by race/ethnicity, socioeconomic status, area of residence (that is, urban versus non-urban), or sex of Washington QL callers.

**Methods:** From October 2004 into October 2005, we conducted telephone surveys of Washington QL callers about three months after their initial call to the QL. Analyses compared 7-day quit rates and satisfaction measures by race/ethnicity, education level, area of residence and sex (using  $\alpha=0.05$ ).

**Results:** We surveyed half ( $n=1312$ ) of the 2638 adult smokers we attempted to contact. The 7-day quit rate among survey participants at the 3-month follow-up was 31% (CI: 27.1% to 34.2%), 92% (CI: 89.9% to 94.1%) were somewhat/very satisfied overall with the QL programme, 97% (CI: 95.5% to 98.2%) indicated that they would probably/for sure suggest the QL to others and 95% (CI: 92.9% to 96.4%) were somewhat/very satisfied with the QL specialist. Quit rate did not vary significantly by race/ethnicity, education level, area of residence or sex. Satisfaction levels were high across subpopulations. Almost all participants (99%) agreed that they were always treated respectfully during interactions with QL staff.

**Conclusions:** The Washington QL appeared effective and well received by callers from the specific populations studied. States choosing to promote their QL more aggressively should feel confident that a tobacco QL can be an effective and well received cessation service for smokers who call from a broad range of communities.

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Like other states in the United States and consistent with the Centers for Disease Control and Prevention guidelines,<sup>1</sup> Washington State is currently implementing a comprehensive tobacco control programme with goals that include increasing cessation, preventing youth initiation and reducing secondhand smoke exposure among the state's residents. A cornerstone of that programme is the provision of a statewide toll-free telephone quitline (QL), where any Washington resident may access trained counsellors for tobacco cessation support. National review panels have recommended telephone counselling to help tobacco users to quit.<sup>2-3</sup> All states in the United States currently have a tobacco QL, and tobacco users can now call a national QL number to be connected to the QL in his/her state.<sup>4</sup> In Washington, over 80 000 people have called the state's QL since its launch in late 2000.<sup>5</sup>

Another goal of Washington's tobacco control programme is to reduce disparities in tobacco use. As a step in addressing this goal, the programme in 2001 convened a stakeholder group of representatives from populations particularly vulnerable to tobacco use: racial, ethnic and sexual minority communities, as well as low income and rural populations. Some stakeholders expressed uncertainty regarding whether a QL is an appropriate strategy for reaching and effectively intervening with their constituents. We have found these concerns raised in other states as well. Indeed, although telephone counselling has been found to be effective,<sup>6,7</sup> few data are available regarding how effective or satisfactory statewide tobacco QLs are by race/ethnicity, socioeconomic status, area of residence (that is, urban vs non-urban) or sex. The purpose of this study was to assess whether quit rates and satisfaction with Washington QL services varied across these subpopulations of callers.

## METHODS

### Washington QL services

For this study, we recruited adult (at least 18 years old) smokers who called the Washington QL between July 2004 and June 2005. During this time, all Washington tobacco users who called the Washington QL received at least a one-call intervention with a QL specialist. Specialists used motivational interviewing techniques<sup>8</sup> to help tobacco users to quit. Specialists also helped callers find out what cessation services they might be able to obtain through their health insurance or employer (which could include additional QL services), offered them referral to local community resources and mailed them a quit kit with self help materials. Following this initial call, callers were encouraged to proactively call the Washington QL again whenever they needed additional support.

In addition, some Washington QL callers were eligible through the state for a more extensive intervention—the "Washington Benefit." The "Washington Benefit" included eight weeks of free nicotine replacement therapy (NRT) and four more counselling calls, which were proactive (that is, a quit date call, quit date follow-up call and two additional calls). During the first half of this study period (that is, July 2004–December 2004), callers eligible for the "Washington Benefit" were mostly low income: they had to be (a) uninsured, enrolled in Medicaid or Indian Health Service, or pregnant, and (b) willing to set a quit date within the next 30 days or needing help staying quit. Starting in January 2005, the Washington QL conducted a service enhancement for young adults, and offered

**Abbreviations:** API, Asian or Pacific Islander; BRFSS, Behavioural Risk Factor Surveillance System; NRT, nicotine replacement therapy; QL, quitline; RUCA, rural urban commuting area

the "Washington Benefit" to all 18–29-year-old callers who either were willing to set a quit date within the next month or needed help staying quit.

The Washington QL attempted to meet the needs of diverse populations. Specialists received cultural awareness and competency training. They were trained to respect and honour callers' communication styles and to try to understand barriers to quitting from the callers' perspectives. Like other states,<sup>9</sup> Washington offered its QL services in English and Spanish, with a translation service available for other languages. In 2005, various materials (for example, bracelets, information cards) promoting the QL to young adults from specific populations (that is, African American, Asian or Pacific Islander (API), Latino, Native American, lesbian/gay/bisexual/transgender communities) were developed and distributed; but, there were no other QL promotions specifically targeting racial/ethnic minority, low income or rural communities during the study period.

### Survey participants and procedures

We conducted a 3-month follow-up survey of callers in English. For this survey, the Washington QL vendor (Free and Clear, Inc) provided data from their Washington QL database for contacting callers as well as information for sample selection and analyses. We selected a sample from among adult smokers who called the Washington QL during July 2004 through June 2005. Callers were excluded from the sampling frame if no telephone number was recorded for them, or if the Washington QL database indicated they used other tobacco products or did not speak English. Users of other tobacco products were excluded because we wanted to keep the survey instrument as simple as possible and avoid asking additional questions about quit behaviour for multiple tobacco products. We excluded callers who did not speak English because few Washington QL callers (under 1%) received the service in a language other than English during the study period. We selected all remaining adult smokers who identified as people of colour or were of unknown race/ethnicity ( $n = 1365$ ). We attempted to interview approximately equal numbers of non-Latino white callers from urban and non-urban areas, so we oversampled non-Latino white callers in non-urban areas. In all, we selected a random sample of 646 adult non-Latino white callers in urban areas, a random sample of 627 adult non-Latino white callers in non-urban areas for a target sample size of between 375 and 400 in each region (assuming a 60% response rate).

We sent an introductory letter to callers selected and then attempted to reach them by telephone about three months after their first call with a QL specialist. Although the North American Quitline Consortium now recommends assessing quit rates at seven months,<sup>10</sup> we had decided to survey clients at three months to minimise loss to follow-up. Interviewers made at least 15 call attempts for each potential participant at a variety of days and times over a 3-week period. Callers reached were ineligible if they reported being less than 18 years old, did not speak English, did not remember having called the Washington QL, were institutionalised (for example, jail or prison) or had a serious health or mental health issue that made it very difficult for them to participate. The telephone survey included questions about participants' satisfaction with the Washington QL, their quit behaviour and other tobacco related issues. We pretested the survey instrument with 24 Washington QL callers. The interview took about 15 minutes to complete. Participants received \$5 for their time and effort. Study recruitment began in October 2004 and continued into October 2005.

### Study measures

#### Baseline measures from the Washington QL database

Baseline measures came from information in the Washington QL database that was obtained at the person's first call with a QL specialist. The database recorded the type of services (that is, Washington Benefit vs one-call intervention) in which the caller enrolled during their initial call with a QL specialist. Our measure of service type was based on services available through the state QL only, and did not include information on any additional QL services the caller might have obtained through their insurer or employer. In addition, this measure did not capture whether a caller enrolled in the Washington Benefit during a subsequent call to the state QL.

Among the demographics recorded in the database were age, race/ethnicity, education level and sex. Using the zip code recorded, we defined area of residence (that is, urban versus non-urban) by rural urban commuting area (RUCA) codes.<sup>11</sup> The database also indicated the baseline number of cigarettes smoked per day.

#### Measures from 3-month follow-up survey

##### Demographic measures

Although some demographic information was available in the Washington QL database, we collected information on race/ethnicity, education level and sex again in the survey for consistency with the state Behavioural Risk Factor Surveillance System (BRFSS) methods<sup>12</sup> and to minimise missing data. Specifically, the interview included a question about whether participants were Hispanic or Latino and a separate question about race ("Which one or more would you say is your race? Would you say..."). Those who reported more than one race were also asked, "Which one of these groups would you say best represents your race?" Based on responses, we created the following categories: Latino, non-Latino African American, non-Latino API, non-Latino American Indian or Alaska Native, and "non-Latino other." For APIs, we asked, "Which of the following best describes your Asian or Pacific Islander heritage?" and provided 11 response categories, as well as "something else." We asked all participants, "What is the highest grade of school you have completed?" We categorised responses into four categories: less than high school, high school, some college (that is, 1–3 years) and college graduate. The interviewer was given information from the Washington QL database on a participant's sex, and was asked to record sex during the interview.

##### Quit measure

We defined 7-day quit rate at three months based on two questions: "Do you now smoke cigarettes every day, some days, or not at all?" and "What was the date you last smoked, even a single puff on a cigarette?" To be considered quit at the 3-month follow-up, participants had to report now smoking "not at all" and a quit date at least seven days before they were interviewed for this study. Only survey participants were included in this calculation.

##### Satisfaction measures

We examined several measures of satisfaction. Specifically, we asked participants:

- "How satisfied were you overall with the quitline programme? Would you say very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied?" We dichotomised responses into satisfied (that is, very or somewhat satisfied) versus not.
- "Would you suggest the quitline to others if they wanted help in quitting smoking? Would you say yes, for sure; yes, probably would; no probably would not; or no, never?" We

**Table 1** Number of study participants by demographic characteristics

Characteristic	Number of participants
Race/ethnicity	
Latino	154
African American, non-Latino	147
Asian/Pacific Islander, non-Latino	58
American Indian/Alaska Native, non-Latino	101
White, non-Latino	762
Other, non-Latino	11
Don't know/refused	38
Education	
Less than high school	260
High school/GED	416
Some college (1–3 years)	470
College graduate	122
Don't know/refused	3
Area of residence at initial QL call*	
Non-urban	452
Urban	819
Sex	
Women	819
Men	452

\* Defined by rural urban commuting area codes based on zip codes in the Washington quitline database (not survey data).

dichotomised responses into would suggest (that is, yes, for sure or probably would) versus not.

- “How would you rate your experience with the specialist? Were you very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?” We dichotomised responses into satisfied (that is, very or somewhat satisfied) versus not.

### Reports of being treated respectfully

We asked participants whether they agreed or disagreed with the following statement: “During your interactions with quitline staff, you were always treated respectfully.” We dichotomised their responses into agree (that is, strongly or somewhat agree) or disagree. For those who disagreed with this statement, we asked, “What did the staff do to make you feel this way?” and recorded their comments. All participants were also asked a series of questions starting with, “Did you ever feel the quitline staff treated you with a lack of respect...” The issues we asked about included: “because of your race or ethnicity,” “because of your education level or income,” and “because of your gender.”

### Missing data

If a participant responded, “Don't know” to a question or refused to answer it, their data for that question were

considered missing. No more than 1% of participants were missing data for each of the quit and satisfaction measures listed above.

### Statistical methods

To assess participation bias in our study, we compared Washington QL callers who were surveyed to those whom we had attempted to contact but were unable to survey with respect to baseline measures in the Washington QL database. We used the Pearson  $\chi^2$  and Mantel-Haenszel test in SAS Version 9.1.3.<sup>13</sup> for these comparisons. For these and all statistical tests below, we used the 0.05 level of significance.

The remaining analyses were based on measures from the survey, except area of residence was defined based on zip codes from the Washington QL database. Data were weighted by the inverse of the sampling fraction. We compared quit rates and QL satisfaction measures among survey participants by race/ethnicity, education level, area of residence and sex. For these analyses, we used the Pearson  $\chi^2$  test with Rao and Scott second order correction in Stata Version 9.2,<sup>14</sup> which takes into account the sampling design. We also present information on survey participants who thought that they were not always treated respectfully during their interactions with QL staff.

## RESULTS

### Comparison of those surveyed and those not

Of the 2638 Washington QL callers we attempted to survey, we were unable to reach 1147 (43%), another 42 (2%) were ineligible, 133 (5%) refused to participate and four had died. Hence, we surveyed half ( $n = 1312$ ) of the 2638 callers we attempted to contact. We were able to survey a significantly larger percentage of Washington QL callers at least 30 years old (53%) than 18–29-year-old callers (45%,  $p < 0.001$ ), and a larger percentage of those with more than a high school education (53%) than others (48%,  $p = 0.02$ ). However, being surveyed was not significantly associated with race/ethnicity, area of residence (that is, urban vs non-urban), sex, baseline number of cigarettes smoked per day or enrolling in the Washington Benefit during the initial call with a QL specialist.

### Survey participant exclusions

We then excluded 34 of the 1312 survey participants from subsequent analyses because they reported in the follow-up survey that they (1) had not smoked 100 cigarettes in their entire life, (2) did not remember calling the Washington QL, or (3) did not speak with a QL specialist. We further excluded seven survey participants because they had completed the interview more than 4.5 months after their first call with a QL specialist. Hence, the remaining analyses are based on 1271 participants. The median time between their first call with a QL specialist and the interview was 95 days (range 80–136 days).

**Table 2** Quit rates and quitline (QL) satisfaction at 3-month follow-up survey, by race/ethnicity

	Latino*	African American	Asian/PI	American Indian/ Alaskan Native	White	p Value†
	(n = 154)	(n = 147)	(n = 58)	(n = 101)	(n = 762)	
7-day quit rate‡	35%	35%	33%	35%	30%	0.42
Satisfied overall with QL programme	93%	92%	91%	93%	92%	0.99
Would suggest QL to others	98%	97%	95%	98%	97%	0.78
Satisfied with QL specialist	94%	93%	95%	97%	95%	0.64

\*Latinos excluded from other racial/ethnic groups.

†p value based on Pearson  $\chi^2$  test with Rao and Scott second order correction.

‡Defined as quit for at least the last 7 days.

Note: No more than 1% of participants were missing data for each of the quit and satisfaction measures listed.



**Table 3** Quit rates and quitline (QL) satisfaction at 3-month follow-up survey, by education level

	Less than high school (n = 260)	High school/GED (n = 416)	Some college (n = 470)	College graduate (n = 122)	p Value*
7-day quit rate†	25%	30%	33%	34%	0.40
Satisfied overall with QL programme	96%	92%	92%	85%	0.03
Would suggest QL to others	98%	98%	97%	95%	0.56
Satisfied with QL specialist	94%	94%	97%	94%	0.39

\*p Value based on Pearson  $\chi^2$  test with Rao and Scott second order correction.

†Defined as quit for at least the last 7 days.

Note: No more than 1% of participants were missing data for each of the quit and satisfaction measures listed.

### Description of survey participants

Descriptive information about these 1271 survey participants is given in table 1. For the remaining results presented in this paper, counts are unweighted and percentages are weighted. There were at least 100 participants in each specific population examined, with the following exceptions. There were only 58 non-Latino API participants and only 11 who were in the “other non-Latino” racial/ethnic category. Of the API participants, 17 were Filipino, nine were Korean, seven were Japanese, five were Native Hawaiian, four were Guamanian/Chamorro, and fewer than four API participants were of each other specific heritage. Because of the small number of API participants of each specific heritage, API participants were combined into one category for statistical analyses. Participants in the “non-Latino other” racial/ethnic category were not included in the statistical analyses of race/ethnicity because the small number of participants in this group.

Among survey participants, the mean number of cigarettes smoked per day reported at baseline was 19.2 (CI: 18.3 to 20.1). Overall, 55% of participants enrolled in the Washington Benefit during their initial call with a QL specialist. Enrolment in the Washington Benefit was not significantly associated with race/ethnicity ( $p = 0.72$ ), education ( $p = 0.43$ ), region ( $p = 0.56$ ) or sex ( $p = 0.53$ ).

### Quit rates and satisfaction

The 7-day quit rate among survey participants at the 3-month follow-up was 31% (CI: 27.1% to 34.2%), and 92% (CI: 89.9% to 94.1%) were satisfied overall with the QL programme. In addition, 97% (CI: 95.5% to 98.2%) indicated that they would suggest the QL to others if they wanted help in quitting smoking, and 95% (CI: 92.9% to 96.4%) were satisfied with the QL specialist.

Seven-day quit rates and the satisfaction measures did not vary significantly by race/ethnicity (table 2). Quit rates were at least 30% in each racial/ethnic group and satisfaction levels were uniformly high. Specifically, more than 90% of participants in each racial/ethnic group were satisfied overall with the QL programme, would suggest the QL to others, and were satisfied with the QL specialist.

Quit rates did not vary significantly by education (table 3). In addition, satisfaction remained quite high across education levels. Although overall satisfaction with the QL programme was significantly lower among the more educated callers ( $p = 0.03$ ), overall satisfaction was still 85% among college graduates and most of them (95%) said that they would suggest the QL to others.

Quit rates were similar for callers from urban (29%) and non-urban regions (34%,  $p = 0.13$ ), and for women (31%) and men (29%;  $p = 0.61$ ). The satisfaction measures did not vary significantly by region or sex: in each region and sex at least 91% were satisfied overall with the QL programme, at least 97% would suggest the QL to others, and at least 94% were satisfied with the QL specialist.

### Reports of being treated respectfully

Twelve of the 1271 participants (1%) disagreed that they were always treated respectfully during their interactions with QL staff. These 12 participants were diverse with regard to race/ethnicity, education level, area of residence and sex. When asked about what QL staff did or said to make them feel this way, they did not mention any issues related to their race/ethnicity, socioeconomic status, area of residence or sex. In addition, among all survey participants, very few responded “yes” when we specifically asked if they ever thought the QL staff treated them with a lack of respect because of their race or ethnicity (<1%), because of their education level or income (2%), or because of their sex (<1%).

### DISCUSSION

In this study, we examined whether a state QL is an appropriate strategy for effectively intervening with smokers who call regardless of their race/ethnicity, education level, area of residence (that is, urban vs non-urban) or sex. The Washington State QL appeared to be effective and well received by callers from the specific populations studied. The 7-day quit rates at our 3-month follow-up survey did not vary significantly by race/ethnicity, education level, area of residence or sex. In addition, the satisfaction levels were high across subpopulations, and almost all participants agreed that they were always treated respectfully during their interactions with QL staff.

We are unaware of published studies examining caller satisfaction with a state tobacco QL by any of the specific populations examined here. Four other published studies have reported on a state tobacco QL's effectiveness by some of these specific populations.<sup>15–18</sup> One study examined the effectiveness of the Maine QL, which routinely offers free NRT.<sup>16</sup> The three other studies—in New York City,<sup>15</sup> Minnesota<sup>17</sup> and Ohio<sup>18</sup>—focused on evaluating new free NRT programmes offered through the state's QL. All four studies reported quit rates at 6 months, and were conducted since year 2000. The sample sizes ranged from about 400<sup>17</sup> to over 9000<sup>18</sup> survey respondents. Two of these studies examined quit rates by race/ethnicity,<sup>15, 18</sup> and the results were mainly consistent with ours: quit rates did not significantly vary by race/ethnicity, except API smokers in the New York City study were significantly more likely to quit than non-Hispanic white smokers.<sup>15</sup> The heritage of the API smokers in that study was not reported, so it is difficult to compare those results to ours. Of the three studies that examined QL effectiveness by education level,<sup>15, 17, 18</sup> two found quit rates did not significantly vary by education level,<sup>15, 17</sup> as we did. The study in Ohio, which was based on over 9000 participants, reported that those with a high school education were significantly more likely to quit than those with less education, though the subgroup quit rates were not presented.<sup>18</sup> All four studies examined quit rates by sex, and only the Ohio study reported a sex difference.<sup>18</sup> None of these four studies reported QL effectiveness by measures of urban vs rural residence. Taken together, these studies support our

# What this paper adds

- Telephone counselling has been found to be effective in helping tobacco users to quit, and all states in the United States currently have a tobacco quitline (QL). However, few data are available regarding how effective or satisfactory statewide tobacco QLs are by race/ethnicity, socioeconomic status, area of residence (that is, urban vs non-urban) or sex.
- Results from the current study suggest the Washington State tobacco QL was effective and well received by callers across race/ethnicity, education level, area of residence and sex.

findings that a state QL can be effective among callers from various specific populations.

The current study was limited to people who called the Washington QL so we cannot generalise the results to all smokers in Washington. When we investigated 2004 Washington QL utilisation rates among smokers in specific populations (data not shown), utilisation did not appear to vary by education or area of residence. In addition, Latino, American Indian/Alaskan Native and African American smokers appeared as likely to call as non-Latino white smokers, contrary to some stakeholder concerns. However, male smokers, API smokers and those over 59 years old appeared less likely to call. These disparities in QL utilisation have been reported by others. Specifically, studies in California<sup>19</sup> and Maine<sup>16</sup> reported under-utilisation of their state QLs by male,<sup>16 19</sup> API<sup>19</sup> and older smokers,<sup>16 19</sup> as well as by additional subpopulations.<sup>16 19</sup>

Findings from the current study have several additional limitations. Firstly, our results cannot be generalised to all state QLs. When a tobacco user calls the Washington QL, s/he could receive a range of QL services, depending on eligibility. The Washington QL also has cultural awareness and competency trainings for their staff, and Washington's tobacco control programme staff work with community groups to ensure that the state cessation services are addressing the needs of specific populations. Secondly, our survey was conducted in English only because few Washington QL callers (under 1%) received the service in a language other than English during the study period. Thirdly, it was easier for us to reach and survey Washington QL callers at least 30 years old, those more educated and those not in preparation at baseline; but being surveyed was not significantly associated with other demographic characteristics or baseline consumption. Fourthly, we interviewed only 58 API callers for this study. Therefore, the estimates for quit rates and satisfaction levels within this group are fairly imprecise, and we were unable to reliably estimate these measures by API heritage. Lastly, sexual minorities are particularly vulnerable to tobacco use,<sup>20 21</sup> but we were unable to conduct targeted sampling of sexual minorities in this study because the Washington QL did not collect information on sexual orientation until 2006. Examining QL effectiveness and acceptability by sexual orientation is an important area for future research.

Even with these limitations, results from the current study suggest the Washington QL was effective and well received by callers across race/ethnicity, education level, area of residence and sex. Not only do QLs help tobacco users to quit, they also serve an essential role in comprehensive tobacco control programmes by providing broad access to cessation services<sup>22 23</sup> and could help eliminate disparities in receipt of cessation

services. Although levels of QL utilisation among smokers in the United States are generally quite low<sup>22</sup> and appear to vary by subpopulations,<sup>16 19</sup> promoting the QL through media<sup>24</sup> or free NRT programmes<sup>15 17 18</sup> can dramatically increase QL call volume. In addition, targeted media campaigns can help increase QL utilisation among specific populations.<sup>25</sup> Given the results from the current study, states choosing to promote their QL more aggressively should feel confident that a tobacco QL can be an effective and well received cessation tool for smokers who call from a broad range of communities.

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